

# **SPECIFIC MEMORANDUM OF AGREEMENT (SMA)**

**between**

**The United States Department of Energy (DOE)**

**and**

**The Power Reactor and Nuclear Fuel Development Corporation of Japan (PNC)**

**for**

## **Joint Development of Remote-Controlled Safeguards Techniques for Monitors for the JOYO Reactor**

### **1. Introduction**

Under Article II (Areas of Cooperation) of the Agreement between PNC and DOE for Cooperation in Research and Development Concerning Nuclear Material Control and Accounting Measures for Safeguards (hereinafter call the "Agreement"), DOE and PNC undertake to carry out a cooperative effort on application of integrated techniques of remote-controlled monitors for the JOYO reactor.

### **2. Scope of Work**

This SMA provides for development of software and application of remote-controlled monitors for fresh and spent-fuel assemblies. The work performed under this SMA shall be performed at the Los Alamos National Laboratory (LANL) and PNC in accordance with the terms and conditions of the Agreement.

### **3. Program Management**

LANL is the organization responsible for development of the software techniques. The work to be done is identified in Appendix I and is limited to development of methods, software and techniques for safeguards. PNC is responsible for activities related to the work of LANL as described in Appendix I.

It is understood by the Parties that LANL is the performer of the development activities to be carried out by DOE. LANL is obligated to comply with the terms and conditions of its management and the LANL operating contract with DOE when performing these and all other services for PNC. The use of LANL, LANL management, and LANL operating personnel, in carrying out the work is authorized on a non-interference basis, i.e., the work performed under this SMA shall not interfere with work related to the prime mission of the Laboratory.

Although DOE commitment to this effort is equal to DOE mission programs, DOE programs may, for reasons related to national security or exigency, preempt efforts in support of this SMA.

Accordingly, DOE, LANL, and persons acting on their behalf shall make best efforts to perform services or furnish information or data hereunder.

PNC agrees to contribute funding for the costs of the development described in Appendix I and to establish priorities among tasks within the program. PNC funding shall be provided to LANL by DOE. DOE shall undertake to develop the safeguards equipment and technology on a best efforts basis within the availability of funding.

DOE and LANL shall work directly with PNC in planning tasks and resolving programmatic and technical questions. LANL shall start by developing and circulating a work plan with projected milestones for each task, and update the work plan as the work progresses. In addition, functional specifications shall be originated and circulated at the beginning of work on implementation of each work plan.

LANL shall prepare brief bimonthly progress reports (in letter format) on each task and circulate them to PNC, DOE, and to other pertinent organizations as requested by PNC.

LANL and PNC shall prepare and present written and oral reports at meetings of the PCG established under Article IV (Management) of the Agreement.

LANL shall implement an independent quality assurance and quality control activity for each task.

Unless otherwise mutually agreed, all equipment and test apparatus procured with funds provided by PNC shall be disposed of as directed by PNC.

No publicity releases (including news releases and advertising) relating to this SMA and the work hereunder shall be issued by either Party without prior coordination with the other Party. Any technical paper, article, publication or announcement of advances generated in connection with work done during the period of performance or in the future, shall give credit to PNC as a sponsor of the work and shall contain a mutual agreed disclaimer statement.

As noted in Article XII (Disclaimer) of the Agreement, all equipment supplied and information transmitted by one Party to the other Party under this SMA shall be appropriate and accurate to the best knowledge and belief of the Supplying and Transmitting Party. DOE, LANL, and persons acting on their behalf shall make best efforts to assure that the use of any such information or data to be furnished does not infringe privately owned rights.

#### 4. Fiscal Management

PNC shall make a cash contribution with the sum of 75,000 in United States dollars to conduct the activities related to the application of safeguards techniques to JOYO as defined in Appendix I of this SMA in the following manner:

A contribution of 75,000 in United States dollars shall be due and payable upon receipt of an invoice to be issued upon or shortly after the date of signature of this SMA.

All contributions by PNC shall be due and payable within 30 days of receipt by PNC of an invoice from DOE.

DOE shall be responsible for the budget planning and financial management and shall make best efforts to complete the PNC-funded activities in Appendix I satisfactorily and within the cash contribution by PNC. DOE costs are determined in accordance with DOE's policy for costing work it performs for others as set forth in 10 CFR Part 1009.

The total cost to PNC for DOE's performance of work under this SMA shall not, without PNC's prior consent, exceed the contributions set forth above.

DOE shall not begin or carry out work prior to entry into force of the Agreement and SMA and receipt of the required payment in advance; and work shall not be continued after funds from PNC have been depleted.

Throughout the duration of work under this SMA, PNC shall provide sufficient funds in advance to reimburse DOE for causing LANL to perform the work described in this SMA, and DOE shall have no obligation to perform in the absence of adequate advance funds. Payment in advance from PNC shall be sufficient to cover the expected obligation and cash requirements of the work until a subsequent request for payment in advance can be made, collected, and recorded. In this regard, sufficient advance funds shall be provided to maintain, at a minimum, a continuous 90-day advance of funds for expected DOE fund requirements during the life of this SMA. Advances shall be sufficient to cover expected termination costs that DOE would incur on behalf of PNC.

#### 5. Indemnification

PNC agrees to indemnify and hold harmless the U.S. Government including DOE and LANL, and persons acting in their behalf in connection with work under this SMA from all liability, including costs and expenses incurred, resulting from use or disclosure by PNC of any information in whatever form, furnished hereunder.

6. Intellectual Property Rights

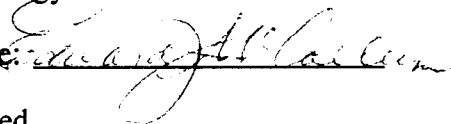
All provisions of Articles V (Information), VI (Patents), and VII (Copyrights) of the Agreement are incorporated by reference herein. These provisions shall apply to all activities carried out under this SMA.

7. Duration and Termination

This SMA shall enter into force upon the later date of signature, and shall continue in force for a two year period, or until mutually agreed by the Parties that all activities under this SMA are completed.

Executed at PNC, Tokyo on this 25th of January, 1991

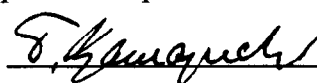
For the United States Department  
of Energy

Name: 

Printed  
Name: Edward J. McCallum

Date: January 10, 1991

For the Power Reactor and Nuclear Fuel  
Development Corporation of Japan

Name: 

Printed  
Name: Tadatomo Yamaguchi

Date: January 25, 1991

## SPECIFIC MEMORANDUM OF AGREEMENT (continued)

### APPENDIX I

#### 1. Study Outline

This program involves the development, study, and test of software systems by LANL for use in the JOYO reactor for safeguarding special nuclear materials (SNM).

Phase I will include conceptual designs and tests.

Phase II will include final design and installation.

Phase III will involve performance testing, data evaluation, documentation and reporting.

#### Software for Unattended Operation

Software is required for the unattended operation of measurement systems at the JOYO Reactor. Both neutron and gamma-ray detectors will be used by PNC to monitor the movement of fresh and spent fuel into and out of the reactor and storage areas. The software to be developed by LANL will include the measurement control and data collection at the Cask Car Monitor (CCM), the Ex-Vessel Transfer Machine (EVTM), and the Exit Gate Monitor (EXGM). The software will include authentication tests of the detector signals.

The data collection software will be based on the GRAND electronics coupled to a local computer. One set of these electronics, including the local computer, will be supplied with the software.

The collected data will be transferred by floppy disc to a central computer, and LANL will produce software to facilitate compiling and reviewing data from the different detector systems.

#### 2. Site

A. Phase I and Phase II (except installation)  
LANL, Los Alamos, New Mexico, USA

B. Phase II (Installation) and Phase III  
PNC, O-arai-Cho, Japan

#### 3. Programmatic Responsibilities

A. LANL, through its best efforts within the funding and schedule, will be responsible for providing design, production, and testing of the software. If necessary, personnel assistance will be available for a PNC representative. Any tests or technical assistance shall be provided on a non-interference basis with existing LANL programs.

B. PNC will be responsible for facility specific program direction, equipment installation.

As more detailed program plans are developed, specific responsibilities will be better defined and delineated.

4. Schedule\*

<u>Tasks</u> **	<u>CALENDAR YEAR - 1991</u>			
	1	2	3	4
<u>JOYO Monitor Software</u>				
Phase I	x	x		
Phase II	x	x	x	
Phase III		x	x	x

\* The schedule will be followed on a best-effort basis depending on receipt of funding and availability of parts.

\*\* Phase I - R&D Studies, Conceptual Design, Tests  
Phase II - Engineering Design, Production, Installation  
Phase III - Performance Testing, Data Evaluation, Reporting

## **SPECIFIC MEMORANDUM OF AGREEMENT (continued)**

### **APPENDIX II**

#### **Key Personnel**

#### **Power Reactor and Nuclear Fuel Development Corporation**

##### **1. PNC Headquarters**

###### **Technical**

Masayuki Iwanaga, General Manager  
Safeguards Office  
Power Reactor and Nuclear Fuel Development Corporation  
9-13, 1-Chome, Akasaka  
Minato-Ku, Tokyo, 107, JAPAN

###### **Administrative**

Masayori Tsutsumi, Deputy Director  
International Division  
Power Reactor and Nuclear Fuel Development Corporation  
9-13, 1-Chome, Akasaka  
Minato-Ku, Tokyo, 107, JAPAN

##### **2. JOYO Facility**

###### **Project Leader**

Yuji Enokido  
Power Reactor and Nuclear Fuel Development Corporation  
JOYO, O-arai Engineering Center

###### **Deputy Project Leader**

Yuu Hasimoto  
Power Reactor and Nuclear Fuel Development Corporation  
JOYO, O-arai Engineering Center

## Department of Energy

### 1. DOE Headquarters

#### Technical

Kenneth Sanders, Chief  
International Branch  
Office of Safeguards and Security  
DP-347.4  
Department of Energy  
Washington, DC 20545

#### Administrative

Benjamin Weakley  
Office of International Research and Development Policy  
Department of Energy

### 2. DOE-Albuquerque Operations Office

#### Field Point of Contact

Robert Y. Lowery, Director and Samuel Mares  
Reimbursable and Defense Technologies Division  
DOE/Albuquerque Operations Office  
P.O. Box 5400  
Albuquerque, NM 87115

### 3. Los Alamos National Laboratory

#### Project Leader

Howard O. Menlove  
MS E540, Group N-1  
Los Alamos National Laboratory  
Los Alamos, NM 87545

#### Deputy Project Leader

Shirley F. Klosterbuer  
MS E540, Group N-1  
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